

We claim:

1. A method for directing voice data transmissions between at least one internal computer system of at least one registered user, said internal computer system  
5 protected by a firewall security system, and at least one external device connected to the external network comprising the steps of:
  - a) accepting transmission of registration information from said internal computer system by at least one gateway server connected to said external network;
  - 10 b) processing and storing transmitted registration information in a database connected to said gateway server, together with at least one identifier of said internal computer system;
  - c) accepting a request from said internal computer system by said gateway server to initiate exchange of voice data with at least one external device connected to the external network;
  - 15 d) determining whether said external device is active;
  - e) determining whether said internal computer system is able to receive data packets containing voice data using a connectionless packet-oriented transfer protocol;

f) determining whether said external device is able to receive voice data packets using a connectionless packet-oriented communication protocol over said external network.

5 g) receiving by said gateway server the voice data packets transmitted from said external device;

10 h) re-packaging said data packets to the packet type allowed to be transmitted to said internal computer system by the firewall security system; and

i) sending said re-packaged voice data packets that originated at said external device from said gateway server to said internal computer system.

15 2. The method according to claim 1, further comprising a step of determining whether said internal computer system is active.

3. The method according to claim 2, further comprising a step of determining whether said internal computer system is able to transmit voice data packets using a connectionless packet-oriented communication protocol over said external network.

4. The method according to claim 1, further comprising a step of determining whether said external device is able to transmit voice data packets using a connectionless packet-oriented communication protocol over said external network.

5. The method according to claim 1, wherein said external device is a telephone connected to said external network through at least one IP voice gateway for transmitting at least one voice signal from the telephone as an IP packet over said external network to said internal computer system.

5 6. The method according to claim 1, wherein said connectionless packet-oriented communication protocol utilized to transmit voice data packets is User Datagram Protocol (UDP).

7. The method according to claim 1, wherein the step of re-packaging voice data packets as data packets of the type allowed to be transmitted to said internal 10 computer system comprises converting UDP data packets to TCP/IP data packets.

8. The method according to claim 1, wherein said firewall security system of said registered user utilizes NAT (network address translation).

9. The method according to claim 1, wherein said external network is the Internet.

15 10. The method according to claim 9, wherein said internal computer system is part of an internal computer network connected to the Internet through at least one network server.

11. The method according to claim 9, wherein said external device is a computer system connected to the Internet.

12. The method according to claim 9, wherein said external computer system is part of a computer network connected to the Internet through at least one network server.

13. The method according to claim 9, wherein at least one identifier of  
5 said internal computer system is its IP address.

14. The method according to claim 9, wherein said external device is connected to the Internet through an Internet Service Provider (ISP).

15. The method according to claim 9, wherein said internal computer system is connected to the Internet through an Internet Service Provider (ISP).

10 16. The method according to claim 1, wherein the step of accepting transmission of registration information from said internal computer system by at least one gateway server comprises accepting an HTML page containing user information.

17. The method according to claim 1, wherein the step of accepting a request from said internal computer system to initiate exchange of voice data comprises  
15 accepting an HTML page containing security information of said user of said internal computer system.

18. The method according to claim 17, wherein said security information comprises a password assigned to said user of said internal computer system.

19. The method according to claim 17, wherein said security information  
is encrypted.

20. The method according to claim 17, wherein said security information  
is stored in computer memory of said internal computer system.

5 21. The method according to claim 1, wherein the step of determining  
whether said external device is active comprises receiving a transmission by said gateway  
server from said external device containing data that identifies said user of said external  
device.

10 22. The method according to claim 1, further comprising the step of  
receiving analog voice data through a microphone of said internal computer system of  
said user and converting said analog voice data to digital format.

23. The method according to claim 22, further comprising the step of  
compressing said converted digital data representing said analog voice data for  
transmission to said external device.

15 24. The method according to claim 23, further comprising the step of  
combining said compressed digital data representing said analog voice data with  
additional digital computer data for transmission to said gateway server.

25. The method according to claim 24, wherein said additional digital  
computer data comprises digital images.

26. The method according to claim 24, wherein said additional digital computer data comprises digital text data.

27. The method according to claim 24, further comprising the step of receiving said combined digital data by said gateway server from said internal computer system.

28. The method according to claim 1, further comprising the step of receiving said re-packaged voice data packets from said gateway server at the internal computer system of said user.

29. The method according to claim 28, wherein said re-packaged voice data packets comprise the analog voice data originated at said external device and a digital text data.

30. The method according to claim 28, wherein said re-packaged voice data packets comprise the analog voice data originated at said external device and a digital image.

15 31. The method according to claim 28, wherein said re-packaged voice data packets are compressed.

32. The method according to claim 31, further comprising the step of decompressing said voice data packets and converting them to an analog voice transmission.

33. The method according to claim 1, wherein the step of determining whether said internal computer system is able to receive data packets using a connectionless packet-oriented transfer protocol is accomplished by transmitting a data packet from said gateway server to said internal computer system using a connectionless packet-oriented protocol and waiting for an acknowledgement of the receipt of said transmission for a predetermined time period.

34. The method according to claim 3, wherein the step of determining whether said internal computer system is able to transmit data packets using a connectionless packet-oriented transfer protocol is accomplished by transmitting a request from said gateway server to said internal computer system to send back a reply using a connectionless packet-oriented transfer protocol.

35. The method according to claim 1, wherein the step of determining whether said external device is able to receive data packets using a connectionless packet-oriented transfer protocol is accomplished by transmitting a data packet from said gateway server to said external device using a connectionless packet-oriented protocol and waiting for an acknowledgement of the receipt of said transmission for a predetermined time period.

36. The method according to claim 4, wherein the step of determining whether said external device is able to transmit data packets using a connectionless packet-oriented transfer protocol is accomplished by transmitting a request from said

gateway server to said external device to send back a reply using a connectionless packet-oriented transfer protocol.

37. A computer based gateway server for directing voice data transmissions between at least one internal computer system protected by a firewall security system and at least one external device connected to the external network,
  - 5 wherein said gateway server device executes a computer program that accepts, processes and stores registration information transmitted from said internal computer system in a database connected to said gateway server, together with at least one identifier of said internal computer system;
- 10 said computer program of said gateway server being operable to determine whether said internal computer system and said external device are active and whether said internal computer system and said external device are able to receive data packets containing voice data using a connectionless packet-oriented transfer protocol; and
- 15 wherein said gateway server device receives voice data packets from said external device, re-packages said data packets to the packet type allowed to be transmitted to said internal computer system by the firewall security system and sends said re-packaged voice data packets to the internal computer system.

38. The device according to claim 37, wherein said computer program of said gateway server is also operable to determine whether said internal computer system and said external device are able to transmit voice data packets using a connectionless packet-oriented communication protocol over said external network.

5 39. The device according to claim 37, wherein said external device is a telephone connected to said external network through at least one IP voice gateway for transmitting at least one voice signal from the telephone as an IP packet over said external network to said internal computer system.

10 40. The device according to claim 37, wherein said connectionless packet-oriented communication protocol utilized to transmit voice data packets is User Datagram Protocol (UDP).

15 41. The device according to claim 37, wherein said gateway server re-packages voice data packets as data packets of the type allowed to be transmitted to said internal computer system by converting them from UDP data packets to TCP/IP data packets.

42. The device according to claim 37, wherein said external network is the Internet.

43. The device according to claim 42, wherein said internal computer system is part of an internal computer network connected to the Internet through at least one network server.

44. The device according to claim 42, wherein said external device is a 5 computer system connected to the Internet.

45. The device according to claim 42, wherein said external computer system is part of a computer network connected to the Internet through at least one network server.

46. The device according to claim 42, wherein at least one identifier of 10 said internal computer system is its IP address.

47. The device according to claim 42, wherein said internal computer system and said external device are connected to the Internet through an Internet Service Provider (ISP).

48. The device according to claim 37, wherein said request from said 15 internal computer system to initiate exchange of voice data is an HTML page containing security information of said user of said internal computer system.

49. The device according to claim 48, wherein said security information comprises a password assigned to said user of said internal computer system.

50. The device according to claim 49, wherein said security information is encrypted.

51. The device according to claim 49, wherein said security information is stored in a computer memory of said internal computer system.

5 52. The device according to claim 37, wherein said computer program of said gateway server determine whether said internal computer system and said external device are active by receiving at least one transmission from each, each said transmission containing data that identifies the respective user.

10 53. The device according to claim 37, wherein said re-packaged data packets comprise the analog voice data that originated at said external device and a digital image.

54. The device according to claim 37, wherein said re-packaged data packets comprise the analog voice data that originated at said external device and a digital text data.

15 55. The device according to claim 37, wherein said re-packaged data packets are compressed.

56. The device according to claim 37, wherein said gateway server determines whether said internal computer system is able to receive data packets using a connectionless packet-oriented transfer protocol by transmitting a data packet from said

gateway server to said internal computer system using a connectionless packet-oriented protocol and waiting for an acknowledgement of the receipt of said transmission for a predetermined time period.

57. The device according to claim 37, wherein said gateway server  
5 determines whether said external device is able to receive data packets using a connectionless packet-oriented transfer protocol by transmitting a data packet from said gateway server to said external device using a connectionless packet-oriented protocol and waiting for an acknowledgement of the receipt of said transmission for a predetermined time period.

10 58. The device according to claim 37, wherein said gateway server  
determines whether said internal computer system is able to transmit data packets using a connectionless packet-oriented transfer protocol by transmitting a request from said gateway server to said internal computer system to send back a reply using a connectionless packet-oriented transfer protocol.

15 59. The device according to claim 37, wherein said gateway server  
determines whether said external device is able to transmit data packets using a connectionless packet-oriented transfer protocol by transmitting a request from said gateway server to said external device to send back a reply using a connectionless packet-oriented transfer protocol.

60. The device according to claim 37, wherein said firewall security system is implemented using one or more packet-filtering routers for screening the incoming and outgoing data transmissions between said internal computer system and said external computer network.

5 61. A method for directing voice data transmissions between at least one internal computer system of at least one registered user that is protected by a firewall security system and at least one external device connected to the external network, said method comprising the steps of:

- a) transmitting a registration information from said internal computer system to at least one gateway server connected to said external network;
- b) transmitting a request from said internal computer system to said gateway server to initiate exchange of voice data with at least one external device connected to the external network;
- c) determining whether said external device is active;
- d) determining whether said internal computer system is able to receive data packets containing voice data using a connectionless packet-oriented transfer protocol;

e) determining whether said external device is able to receive voice data packets using a connectionless packet-oriented communication protocol over said external network.

f) transmitting voice data packets from said external device to said gateway server;

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g) re-packaging said data packets to the packet type allowed to be transmitted to said internal computer system; and

h) sending said re-packaged voice data packets that originated at said external device from said gateway server to said internal computer system.

10 62. The method according to claim 60, further comprising a step of determining whether said internal computer system is active.

15 63. The method according to claim 62, further comprising a step of determining whether said internal computer system is able to transmit voice data packets using a connectionless packet-oriented communication protocol over said external network.

64. The method according to claim 63, further comprising a step of determining whether said external device is able to transmit voice data packets using a connectionless packet-oriented communication protocol over said external network.

65. The method according to claim 61, wherein said external device is a telephone connected to said external network through at least one IP voice gateway for transmitting at least one voice signal from the telephone as an IP packet over said external network to said internal computer system.

5 66. The method according to claim 61, wherein said connectionless packet-oriented communication protocol utilized to transmit voice data packets is User Datagram Protocol (UDP).

10 67. The method according to claim 66, wherein the step of re-packaging voice data packets as data packets of the type allowed to be transmitted to said internal computer system comprises converting UDP data packets to TCP/IP data packets.

68. The method according to claim 61, wherein said external network is the Internet.

15 69. The method according to claim 68, wherein said internal computer system is part of an internal computer network connected to the Internet through at least one network server.

70. The method according to claim 68, wherein said external computer system is part of a computer network connected to the Internet through at least one network server.

71. The method according to claim 68, wherein at least one identifier of said internal computer system is its IP address.

72. The method according to claim 68, wherein said external device and internal computer system are connected to the Internet through at least one Internet  
5 Service Provider (ISP).

73. The method according to claim 61, wherein the step of transmitting a registration information from said internal computer system to said at least one gateway server comprises transmitting an HTML page containing user information.

74. The method according to claim 61, wherein the step of transmitting a  
10 request from said internal computer system to said gateway server to initiate exchange of voice data with at least one external device comprises transmitting an HTML page containing security information of said user of said internal computer system.

75. The method according to claim 74, wherein said security information comprises a password assigned to said user of said internal computer system.

15 76. The method according to claim 61, wherein the step of determining whether said external device is active comprises receiving a transmission by said gateway server from said external device containing data that identifies said user of said external device.

77. The method according to claim 61, further comprising the step of receiving analog voice data through a microphone of said internal computer system of said user and converting said analog voice data to digital format.

78. The method according to claim 77, further comprising the step of  
5 compressing said converted digital data representing said analog voice data for transmission to said external device.

79. The method according to claim 78, further comprising the step of combining said compressed digital data representing said analog voice data with additional digital computer data for transmission to said gateway server.

10 80. The method according to claim 79, wherein said additional digital computer data comprises digital images.

81. The method according to claim 79, wherein said additional digital computer data comprises digital text data.

82. The method according to claim 79, further comprising the step of  
15 transmitting said combined digital data from said internal computer system to said gateway server.

83. The method according to claim 61, further comprising the step of receiving the re-packaged voice data packets from said gateway server at said internal computer system of said user.

84. The method according to claim 83, wherein said re-packaged voice data packets are compressed.

85. The method according to claim 84, further comprising the step of decompressing said voice data packets and converting them to analog format.

5 86. The method according to claim 61, wherein the step of determining whether said internal computer system is able to receive data packets using a connectionless packet-oriented transfer protocol is accomplished by transmitting a data packet from said gateway server to said internal computer system using a connectionless packet-oriented protocol and waiting for an acknowledgement of the receipt of said  
10 transmission for a predetermined time period.

87. The method according to claim 63, wherein the step of determining whether said internal computer system is able to transmit data packets using a connectionless packet-oriented transfer protocol is accomplished by transmitting a request from said gateway server to said internal computer system to send back a reply  
15 using a connectionless packet-oriented transfer protocol.

88. The method according to claim 61, wherein the step of determining whether said external device is able to receive data packets using a connectionless packet-oriented transfer protocol is accomplished by transmitting a data packet from said gateway server to said external device using a connectionless packet-oriented protocol

and waiting for an acknowledgement of the receipt of said transmission for a predetermined time period.

89. The method according to claim 64, wherein the step of determining whether said external device is able to transmit data packets using a connectionless packet-oriented transfer protocol is accomplished by transmitting a request from said gateway server to said external device to send back a reply using a connectionless packet-oriented transfer protocol.

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